

AMENDMENTS TO CLAIMS

Listing of Claims:

Claim 1 (Currently amended): A torque transducer comprising:
a shaft subject to torque about a longitudinal axis;
a transducer element integral with or carried by the shaft and remanently ~~magnetised~~ magnetized to emanate a component of magnetic field that is dependent on torque applied about said axis,
a sensor coil disposed about said element to generate a voltage/current in response to changes in said component,
a load connected to said sensor coil to enable a current to circulate in 10 the sensor coil; and
a receiver unit remote from said coil and responsive to a field emanated by said sensor coil to generate a torque-dependent signal

Claim 2 (Original): A torque transducer as claimed in Claim 1 in which said receiver unit comprises a coil, ~~preferably wound on a magnetic core.~~

Claim 3 (Original): A torque transducer as claimed in Claim 1 in which the receiver unit coil is wound on a ferrite core.

Claim 4 (Currently amended): A torque transducer as claimed in ~~Claim 1, 2 or 3~~ Claim 1 in which said load comprises a capacitor connected across said sensor coil to enhance a field component emanated thereby.

Claim 5 (Currently amended): A torque transducer as claimed in ~~any preceding claim~~ Claim 1 in which said transducer element comprises a region integral with said shaft and remanently ~~magnetised~~ magnetized with an annulus of longitudinal ~~magnetisation~~ magnetization (axially-directed ~~magnetisation~~ magnetization) which exhibits profile shift, and said sensor coil comprises two spaced coil sections which are aligned with respective response maxima and are connected such that the voltages induced therein are summed.

Claim 6 (Currently Amended): A torque transducer system comprises a torque transducer which is as claimed in ~~any one of Claims 1 to 5, and Claim 1~~ wherein said shaft is coupled to or is a part of a source of a torque pulse, such as a power torque tool.

Claim 7 (Original): A torque transducer assembly comprising:

- a housing having an opening therethrough;
- a torque transmission shaft extending in said opening and rotatable about an axis extending through said opening, said shaft having respective end portions accessible from exteriorly of said housing,
- a torque transducer element integral with, or carried by, said shaft to emanate a magnetic field dependent on the torque in the shaft,
- a coil coaxial with said element and adjacent thereto; and for sensing the torque-dependent field,
- a load, preferably a capacitive load, connected across the coil to enable current to circulate therethrough for emanating a field externally of the assembly that is dependent on changes in torque in the shaft.

Claim 8 (Original): A torque transducer assembly as claimed in Claim 7 in which one end portion of said shaft projects exteriorly of said housing and provides an output portion of the shaft.

Claim 9 (Currently Amended): A torque transducer assembly as claimed in Claim 7 ~~or 8~~ in which said housing is configured to enable it to be secured against rotation.

Claim 10 (Original): A torque transducer assembly as claimed in Claim 9 further comprising a member having a first portion engaged with the housing and second portion engageable with the body of a power torque tool to secure the housing against rotation with respect to said body.

Claim 11 (Currently Amended): A torque transducer comprising:

- a shaft subject to torque about a longitudinal axis;
- a transducer element integral with or carried by the shaft and remanently ~~magnetised~~ magnetized to emanate a component of magnetic field that is dependent on torque applied about said axis,
- a sensor coil disposed about said element to generate a voltage/current in response to changes in said component,
- a power supply unit comprising a rectifier arrangement connected to said sensor coil to derive a unipolar electrical supply from changes of torque sensed by said sensor coil; and
- signalling means responsive to voltage/current signals in said sensor coil to transmit the signals in a wire-less manner for remote detection, said signalling means being powered by said electrical supply.

Claim 12 (Currently Amended): A torque transducer as claimed in Claim 11 in which said transducer element comprises a. region integral with said shaft and remanently ~~magnetised~~ magnetized with an annulus of longitudinal ~~magnetisation~~ magnetization (axially-directed ~~magnetisation~~ magnetization) which exhibits profile shift, and said sensor coil comprises two spaced coil sections which are aligned with respective response maxima and are connected such that the voltages induced therein are summed.

Claim 13 (Currently Amended): A torque transducer comprising:

- a shaft subject to torque about a longitudinal axis;
- a transducer element integral with or carried by the shaft and remanently ~~magnetised~~ magnetized to emanate a component of magnetic field that is dependent on torque applied about said axis,
- a sensor coil disposed about said element to generate a voltage/current in response to changes in said component,
- a power supply unit comprising a rectifier arrangement connected to said sensor coil to derive a unipolar electrical supply from changes of torque sensed by said sensor coil;

a sensor arrangement responsive to said torque-dependent magnetic field component to provide a torque-dependent signal; and
signalling signaling means responsive to a torque-dependent signal to transmit the signal in a wire-less manner for remote detection, said signalling signaling means and, if appropriate, said sensor arrangement being powered by said electrical supply.

Claim 14 (Currently amended): A torque transducer system comprises a torque transducer which is as claimed in ~~Claim 11, 12 or 13, and~~ Claim 11 wherein said shaft is coupled to or is a part of a source of a torque pulse, such as a power torque tool.

Claim 15 (New): A torque transducer system comprises a torque transducer which is as claimed in Claim 13 wherein said shaft is coupled to or is a part of a source of a torque pulse, such as a power torque tool.

Claim 16 (New): A torque transducer as claimed in Claim 1 in which said receiver unit comprises a coil and wherein said coil is wound on a magnetic core.